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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/063,195	03/28/2002	Bruce M. Kopf	200-0527 CLH	4789

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EXAMINER

TIBBITS, PIA FLORENCE

ART UNIT	PAPER NUMBER
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2838

DATE MAILED: 08/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/063,195

Applicant(s)

KOPF ET AL.

Examiner

Pia F Tibbitts

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention: the statement "state of charge of said energy storage device is less than or equal **to aid** first predetermined state of charge" is not clear and needs to be explained.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ding et al. [hereinafter Ding][6580977].

Ding discloses in figures 1-7 a hybrid power system 20 for supplying power to a load 36, comprising an energy storage device/battery 54, a fuel cell system/ FCS 44, a controller 50 monitoring the battery SOC_b, a controller 42 monitoring SOC_f, and an application controller 18 receiving feedback from the power requirement P_{req}, SOC_b, and SOC_f. Ding does not disclose specifically that the energy storage device supplies all of the power when a state of charge of the energy storage device is greater than a first predetermined state of charge and the fuel cell system provides at least a portion of the power when the state of charge of the energy storage device is less than or equal to the first predetermined state of charge.

However, Ding discloses monitoring a battery SOC_b used during FCS 44 start-up, so that if SOC_{b4} > SOC_b > SOC_{b2}, the battery 54 is always used to assist FCS 44 start-up (including FCS 44 heat-up and to provide power to FCS 44), i.e., the battery 50 supplies all of the power. This is because the energy needed to assist fuel cell start-up changes with environmental temperature and battery 54 capacity changes with environmental temperature, as well as the discharge rate of battery 54 [column 6, lines 8-18]. The patent also discloses monitoring the battery SOC when providing power for the hybrid powertrain, i.e., if SOC_b = < SOC_{b2}, a command is issued to charge the battery 54 from the FCS 44 at an efficient range or peak power until SOC = SOC_{b4} and use the FCS 44 to meet vehicle power requirements, i.e., the fuel cell system provides at least a portion of the power [see also column 6, lines 40-67, and column 7, lines 1-18]. Therefore, by eliminating the use of several thresholds for the battery SOC, cited in the Ding reference, applicant neither extends the life of the batteries being charged, nor makes it easier to adjust to changes in the environmental temperature, which affects the fuel cell start-up, as well as the battery discharge rate, as cited in the disclosure. It would be obvious to one skilled in the art at the time the invention was made that the elimination of an element and its function, i.e., battery SOC threshold, in a combination is an obvious expedient if the remaining elements perform the same functions as before. See *In Re Karlson*, 136 USPQ 184 (CCPA 1963), *In Re Wilson*, 153 USPQ 740 (CCPA 1967), and *Ex Parte Rainu*, 168 USPQ 375 (PTO Bd. of App. 1969).

As to claims 3 and 11, the first predetermined state of charge being between about seventy percent and ninety percent: it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a selection for the battery SOC, since it has been held that discovering an "optimum" or "preferred" value for a result effective variable involves only routine skill in the art, in order to increase battery service life and efficiency. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) [see also column 5, lines 53-55 for "preferred" SOC_b values in the patent].

As to claim 4, the patent discloses a second predetermined state of charge SOC_{b1} that is a SOC lower limit for the battery 54 to stop providing power [see also column 5, lines 44-45].

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As to claims 5 and 13, the second predetermined state of charge being about twenty percent and about fifty percent: it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a selection for the battery SOC, since it has been held that discovering an "optimum" or "preferred" value for a result effective variable involves only routine skill in the art, in order to increase battery service life and efficiency. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) [see also column 5, lines 53-55 for "preferred" SOCb values in the patent].

As to claim 6, all of the power being supplied by the fuel cell system when a power requirement of the load is less than or equal to an optimal power output of said fuel cell system: the patent discloses a Preq [see also column 5, lines 56-59], and monitoring of SOCf for FCS 44 so that it is working at efficient range or peak/optimal power [see also column 7, lines 1-18].

As to claims 7 and 9, the power is supplied by both the energy storage device and the fuel cell system when the state of charge of the energy storage device is less than or equal to the first predetermined state of charge and a power requirement of the load is greater than an optimal power output of the fuel cell system: the patent clearly discloses in fig.7 monitoring a power requirement Preq, Pf, and P1 and monitoring SOCb and SOCf [see also figures 5, 6 and 7].

As to claim 8, the fuel cell system charging the energy storage device when the state of charge of said energy storage device is less than or equal to said first predetermined state of charge: the patent discloses that the battery starts recharging from FCS 44 at SOCb3 [see also column 5, lines 48-50].

With respect to the method claims 14-20: the method steps will be met during the normal operation of the apparatus described above.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the

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examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in PTO-892 and not mentioned above disclose related apparatus.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Pia Tibbits whose telephone number is (703) 308-7305. If unavailable, contact the Supervisory Patent Examiner Mike Sherry whose telephone number is (703) 308-1680.

6. Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center receptionist whose telephone number is (703) 308-0956.

Papers related to Technology Center 2800 applications only may be submitted to Technology Center 2800 by facsimile transmission. Any transmission not to be considered an official response must be clearly marked "DRAFT". The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Technology Center Fax Center number is (703) 308-7722 or (703) 308-7724.

PFT

August 6, 2003

A handwritten signature in black ink, consisting of a large, stylized 'P' followed by a horizontal line extending to the right.